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EXAMINER

BROWN, JAYME L

ART UNIT PAPER NUMBER

1733

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/739,356

Applicant(s)

HOU ET AL.

Examiner

Jayme L. Brown

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/18/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 12/18/03 has been considered by the examiner.

Specification

2. The disclosure is objected to because of the following informalities:

On page 3, line 10 of paragraph [0008], "there is may" should be changed to - - there may - -.

On page 6, paragraph [0020], item 44 is referred to as a cylinder while on page 9, paragraph [0026], item 44 is referred to as a clamping element. The item number reference should be kept consistent throughout the Specification.

On page 8, paragraph [0024], item 40 is referred to as a welding electrode while on page 9, paragraph [0026], item 40 is referred to as a copper slap. The item number reference should be kept consistent throughout the Specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 6 recite the limitation "said second surface" in lines 6, 7, and 11 of claim 5 and lines 6 and 7 of claim 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang (U.S. Patent 6,836,948).

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this

application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Wang teaches a method of joining dissimilar materials (metal sheet and metal tube), said method comprising the steps of: driving a welding member through at least a portion of a first material and into contact with at least a portion of a second material, said second material being dissimilar from said first material; and passing an electrical current through said welding member and said second material to fuse said welding member and said second material (Abstract). Wang anticipates claim 1.

Regarding claim 2, Wang teaches providing the welding member with an enlarged portion so as to trap said first material between said enlarged portion and said second material (Figure 1).

Regarding claim 3, Wang teaches a method of joining dissimilar materials (metal sheet and metal tube), said method comprising the steps of: placing a first component against a second component at a predetermined joining location, wherein the first and second components are composed of dissimilar materials; driving a self-piercing rivet through said first component and into said second component to mechanically attach said first component to said second component at said joining location; passing an electric current through said self-piercing rivet and said second component at said joining location to fuse material at interfaces of at least said rivet and said second component; and stopping the flow of electrical current to solidify the fused material and

form a welded bond between at least said rivet and said second component (Abstract; Column 1, lines 40-63). Wang anticipates claim 3.

Regarding claim 4, Wang teaches passing said electrical current by contacting said rivet with a first electrode and contacting said second component with a second electrode at a second surface opposite said joining location and using said electrodes to pass said current through said rivet and second component (Column 1, line 56 – Column 2, line 7).

Regarding claim 5, Wang teaches engaging said first component at said joining location with an electrode assembly comprising a first electrode and a hollow cylindrical electrode tool, said tool being adapted to encompass said rivet and said first electrode and to exert a clamping force on said first component; engaging said second component at said second surface with a second electrode adapted to conform to said second surface for clamping and electrical contact; and using said electrodes to pass said current through said rivet and second component, said current flowing around or through said second component from said second surface to said joining location at said interface (Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Figure 2).

Regarding claim 6, Wang teaches engaging said first component at said joining location with an electrode assembly comprising a first electrode and a hollow cylindrical electrode tool, said tool being adapted to encompass said rivet and said first electrode and to exert a clamping force on said first component; engaging said second component at said second surface with a second electrode adapted to conform to said second surface for clamping and electrical contact; placing said rivet in said electrode

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tool and driving said rivet through said first component and into said second component with said first electrode; and using said electrodes to pass said current through said rivet and second component (Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Figures 2-4).

Regarding claim 7, Wang discloses joining a non-ferrous component to a ferrous component, said method comprising the steps of: pressing said non-ferrous component against one surface of said ferrous component at a predetermined joining location using a first electrode assembly to press against said non-ferrous component and a second electrode against another surface of said ferrous; driving a self-piercing ferrous rivet through said non-ferrous component using said first electrode and at least into contact with a wall of said ferrous component at said joining location to mechanically attach said non-ferrous component to said ferrous component; and passing an electric current through said electrodes, said ferrous rivet, and said ferrous component at said joining location to fuse at least said ferrous rivet to said ferrous component; and stopping the flow of electric current to form a welded bond between at least said rivet and said ferrous component (Abstract; Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Column 6, lines 7-26; Figures 2-4).

7. Claims 1 and 2 are rejected under 35 U.S.C. 102(a/e) as being anticipated by Wang et al. (U.S. Patent 6,694,597)

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Wang et al. teaches a method of joining dissimilar materials (metal sheets), said method comprising the steps of: driving a welding member through at least a portion of a first material and into contact with at least a portion of a second material, said second material being dissimilar from said first material; and passing an electrical current through said welding member and said second material to fuse said welding member and said second material (Abstract; Column 1, lines 39-67). Wang et al. anticipates claim 1.

Regarding claim 2, Wang et al. teaches providing the welding member with an enlarged portion so as to trap said first material between said enlarged portion and said second material (Figure 1, 5A and 5B).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being obvious over Wang (U.S. Patent 6,836,948) in view of the Admitted Prior Art and/or Stol et al. (U.S. Patent 6,769,595).

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claim 1, Wang teaches a method of joining a metal sheet to a metal tube, said method comprising the steps of: driving a welding member through at least a portion of a first material and into contact with at least a portion of a second material;

and passing an electrical current through said welding member and said second material to fuse said welding member and said second material (Abstract).

It appears that the materials disclosed in Wang are dissimilar. Additionally, the Admitted Prior Art and Stol et al. (Column 1, lines 11-16; Column 1, line 66 – Column 2, line 3) both teach that the joining of the components as shown in Wang are typically dissimilar materials. Stol et al. further teaches joining a range of non-ferrous and ferrous metals together. One skilled in the art would have readily appreciated joining dissimilar materials together since it is known and conventional, especially in the automotive art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to join dissimilar materials in the method of Wang as suggested by the Admitted Prior Art and/or Stol et al. since it is known in the art.

Regarding claim 2, Wang teaches providing the welding member with an enlarged portion so as to trap said first material between said enlarged portion and said second material (Figure 1).

Regarding claim 3, Wang teaches a method of joining a metal sheet and a metal tube), said method comprising the steps of: placing a first component against a second component at a predetermined joining location, wherein the first and second components are composed of dissimilar materials; driving a self-piercing rivet through said first component and into said second component to mechanically attach said first component to said second component at said joining location; passing an electric current through said self-piercing rivet and said second component at said joining location to fuse material at interfaces of at least said rivet and said second component;

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and stopping the flow of electrical current to solidify the fused material and form a welded bond between at least said rivet and said second component (Abstract; Column 1, lines 40-63).

It appears that the materials disclosed in Wang are dissimilar. Additionally, the Admitted Prior Art and Stol et al. (Column 1, lines 11-16; Column 1, line 66 – Column 2, line 3) both teach that the joining of the components as shown in Wang are typically dissimilar materials. Stol et al. further teaches joining a range of non-ferrous and ferrous metals together. One skilled in the art would have readily appreciated joining dissimilar materials together since it is known and conventional, especially in the automotive art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to join dissimilar materials in the method of Wang as suggested by the Admitted Prior Art and/or Stol et al. since it is known in the art.

Regarding claim 4, Wang teaches passing said electrical current by contacting said rivet with a first electrode and contacting said second component with a second electrode at a second surface opposite said joining location and using said electrodes to pass said current through said rivet and second component (Column 1, line 56 – Column 2, line 7).

Regarding claim 5, Wang teaches engaging said first component at said joining location with an electrode assembly comprising a first electrode and a hollow cylindrical electrode tool, said tool being adapted to encompass said rivet and said first electrode and to exert a clamping force on said first component; engaging said second component at said second surface with a second electrode adapted to conform to said

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second surface for clamping and electrical contact; and using said electrodes to pass said current through said rivet and second component, said current flowing around or through said second component from said second surface to said joining location at said interface (Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Figure 2).

Regarding claim 6, Wang teaches engaging said first component at said joining location with an electrode assembly comprising a first electrode and a hollow cylindrical electrode tool, said tool being adapted to encompass said rivet and said first electrode and to exert a clamping force on said first component; engaging said second component at said second surface with a second electrode adapted to conform to said second surface for clamping and electrical contact; placing said rivet in said electrode tool and driving said rivet through said first component and into said second component with said first electrode; and using said electrodes to pass said current through said rivet and second component (Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Figures 2-4).

Regarding claim 7, Wang teaches joining a metal sheet to a metal tube, said method comprising the steps of: pressing said sheet metal component against one surface of said metal tube at a predetermined joining location using a first electrode assembly to press against said sheet metal component and a second electrode against another surface of said metal tube; driving a self-piercing metal rivet through said sheet metal component using said first electrode and at least into contact with a wall of said metal tube at said joining location to mechanically attach said sheet metal component to said metal tube; and passing an electric current through said electrodes, said metal

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rivet, and said metal tube at said joining location to fuse at least said metal rivet to said metal tube; and stopping the flow of electric current to form a welded bond between at least said rivet and metal tube (Abstract; Column 2, line 64 – Column 3, line 14; Column 3, lines 37-58; Column 6, lines 7-26; Figures 2-4).

As to the metals being non-ferrous and ferrous, the Admitted Prior Art and Stol et al. (Column 1, lines 11-16; Column 1, line 66 – Column 2, line 3) both teach that the components typically joined in the process shown by Wang are ferrous and non-ferrous. Stol et al. teaches joining a range of non-ferrous and ferrous metals together and that the rivet is made of the same materials as the components. One skilled in the art would have readily recognized that the rivet being made of a ferrous material. One skilled in the art would also have readily appreciated joining non-ferrous and ferrous materials together since it is known and conventional, especially in the automotive art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to join non-ferrous and ferrous materials in the method of Wang as suggested by the Admitted Prior Art and/or Stol et al. since it is known in the art.

10. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aeschlimann et al. (WO 98/42988; See U.S. Patent 6,913,666 for English translation) in view of Rice et al. (U.S. Pub. 2004/0050906).

Regarding claim 1, Aeschlimann et al. teaches a method of joining dissimilar materials, said method comprising the step of: driving a welding member through at least a portion of a first material and into contact with at least a portion of a second

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material, said second material being dissimilar from said first material; and subjecting the welding member and said second material to ultrasonic or some other appropriate vibration action for supplying energy to plasticize the welding member in order to fuse said welding member to said second material (Abstract; Column 1, line 65 – Column 2, line 65; Figure 1).

Aeschlimann et al. is silent toward passing an electric current through said welding member and said second material. Rice et al. is directed to a method of friction welding structural members and teaches providing additional heat to the structural members by passing an electric current through the structural members. One skilled in the art would have readily appreciated applying additional heat by an electric current in order to make sure that the structural members are heated to the proper welding temperature. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply additional heat via electric current in the method of Aeschlimann et al. as suggested by Rice et al. in order to make sure that the welding member is heated to the proper temperature so that it is plasticized.

Regarding claim 2, Aeschlimann et al. teaches providing the welding member with an enlarged portion so as to trap said first material between said enlarged portion and said second material (Figure 1).

Regarding claim 3, Aeschlimann et al. teaches a method of joining dissimilar materials, said method comprising the steps of: placing a first component against a second component at a predetermined joining location, wherein the first and second components are composed of dissimilar materials; driving a self-piercing rivet through

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said first component and into said second component to mechanically attach said first component to said second component at said joining location; subjecting the welding member and said second material to ultrasonic or some other appropriate vibration action for supplying energy to plasticize the welding member in order to fuse said welding member to said second material (Abstract; Column 1, line 65 – Column 2, line 65; Figure 1).

Aeschlimann et al. is silent toward passing an electric current through said self-piercing rivet and said second component at said joining location to fuse material at interfaces of at least said rivet and said second component, and stopping the flow of electrical current to solidify the fused material and form a welded bond between at least said rivet and said second component.

Rice et al. is directed to a method of friction welding structural members and teaches providing additional heat to the structural members by passing an electric current through the structural members. One skilled in the art would have readily appreciated applying additional heat by an electric current in order to make sure that the structural members are heated to the proper welding temperature. One skilled in the art would also have readily recognized that stopping the electric current and other energy supplies (ultrasonic, friction, vibration, etc.) would cause the material to solidify and form a welded bond between at least said rivet and said second component. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply additional heat via electric current and then to stop the energy supplies in the method of Aeschlimann et al. as suggested by Rice et al. in order to make sure that the

welding member is heated to the proper temperature so that it is plasticized and to then to have the material solidify since it is known in the art.

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1 and 3-7 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,836,948 in view of the Admitted Prior Art and/or Stol et al. (U.S. Patent 6,769,595). All the limitation of claims 1 and 3-7 of the instant application are encompassed in claims 1-5 of U.S. Patent No. 6,386,948 except the limitations of the dissimilar materials and the non-ferrous and ferrous materials. These limitations are taught by the Admitted Prior Art and/or Stol et al. and are addressed above in paragraph 9.

13. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6, 8, 9 and 15 of U.S. Patent No. 6,694,597 in view of the Admitted Prior Art. All the limitations of claim 1 of the instant application are encompassed in claims 1, 6, 8, 9, and 15 of U.S. Patent No. 6,694,597 except for the members being dissimilar materials. The Admitted Prior Art teaches that it is know to join dissimilar materials by welding and riveting.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jayme L. Brown** whose telephone number is **571-272-8386**. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jayme L. Brown

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GLADYS A.P. CORCORAN
PRIMARY EXAMINER